PB85-249548

Superfund Record of Decision (EPA Region 5) Kummer Sanitary Landfill, Northern Township Drinking Water Operable Unit Beltrami County, Minnesota, June 1985

(U.S.) Environmental Protection Agency
Washington, DC

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EPA

Superfund Record of Decision:

Kummer Landfill, MN

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Kummer Sanitary Landfill occupies approximately 40 acres in the southern portion of Northern Township, Beltrami County, Minnesota. The site was operated as a solid waste facility from 1971 until October 1, 1984. During the period of operations, municipal refuse, demolition debris, and industrial waste were accepted at the site. However, the disposal of hazardous wastes was never documented at any time during operations. The landfill is situated above a shallow surficial sand aquifer which serves numerous downgradient private wells east and southeast of the landfill. At present, the Kummer Sanitary Landfill appears to be the major source of volatile organic contamination found in private drinking water wells in the area.

The selected remedial action includes provisions for an alternate water supply. These provisions consist of constructing two wells in a deep uncontaminated aquifer, a water tower and distribution system. Total capital cost for the selected remedial alternative is estimated to be $1,624,850 with O&M costs estimated to be an additional $28,440 per year.

17. KEY WORDS AND DOCUMENT ANALYSIS

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Record of Decision Kummer Landfill, NM Contaminated Media: gw Key contaminants: VOCs		

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RECORD OF DECISION
Remedial Alternative Selection

Site: Kummer Sanitary Landfill, Northern Township, Drinking Water Operable Unit; Beltrami County, Minnesota

Documents Reviewed:

I am basing my decision on the following documents describing the analysis of the cost-effectiveness of remedial alternatives for the Kummer Sanitary Landfill, Northern Township, Drinking Water Operable Unit:

- Feasibility Study - Central Water Supply for Northern Township, Beltrami County, Minnesota, Howard, Neeedles, Tammen & Bergendoff, January 1985.

- Summary of Remedial Alternative Selection.

- Responsiveness Summary, April 1985.

Description of Selected Remedy:

- Provisions for an alternate water supply for the affected residents in Northern Township, Minnesota consisting of constructing two wells in a deep uncontaminated aquifer, a water tower and distribution system. The location of the new wells will be in an area unaffected by the landfill.

- First year Operation & Maintenance costs to provide the labor, power and chemical supplies for the recommended alternative.

Declarations:

Consistent with the Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR Part 300), I have determined that the alternate drinking water supply at the Kummer Sanitary Landfill site is a cost-effective remedy and provides adequate protection of public health, welfare, and the environment. The State of Minnesota has been consulted and agrees with the approved remedy. In addition, the action will require future operation and maintenance activities to ensure the continued effectiveness of the remedy. These activities will be considered part of the approved action and eligible for Trust Fund monies for a period of one year.

I have also determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for a period of one year.

The State of Minnesota will undertake an additional remedial investigation/feasibility study to determine the nature and extent of the threat presented by the release and evaluate proposed remedies. If additional remedial actions are determined to be necessary a Record of Decision will be prepared for approval of the future remedial action.

6/14/85
Date

for Valdas V. Adamkus
Regional Administrator

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

KUMMER SANITARY LANDFILL

NORTHERN TOWNSHIP, DRINKING WATER OPERABLE UNIT, BELTRAMI COUNTY, MINNESOTA

SITE LOCATION AND DESCRIPTION:

Northern Township is located in Beltrami County and borders the city of Bemidji (site maps attached, Figures 1 and 2). The township had an estimated population of 3,997 in 1983 and contains part or all of four lakes, including Lake Bemidji, and is largely composed of single family homes. The township also contains a large mobile home park. The Kummer Sanitary Landfill occupies approximately 40 acres in the southern portion of the township and is about 750 feet from the nearest residence. The landfill is situated above a shallow surficial sand aquifer which serves as a primary source of drinking water for an area in Northern Township east and southeast of the landfill with an estimated current population of 960 persons. This area has been designated as the "affected area" requiring an alternate water supply.

SITE HISTORY:

The Kummer Sanitary Landfill was permitted by the Minnesota Pollution Control Agency (MPCA) on April 26, 1971. The site was operated as a solid waste facility from 1971 until October 1, 1984 when Charles Kummer voluntarily ceased the disposal of municipal waste. Since that time, the site has only accepted demolition waste. During the period of operations, the landfill was owned and operated by Charles and Jon Kummer. Primarily, municipal refuse, demolition debris and industrial waste were accepted at the site. However, the MPCA files do not document the disposal of hazardous wastes at any time during operations.

The landfill is situated above a shallow surficial sand aquifer which serves numerous downgradient private wells east and southeast of the landfill. A clay layer appears to be present in some areas separating the first sand aquifer from a second major aquifer. However, there is no evidence that the layer is continuous throughout the area or that the layer would prohibit volatile organic hydrocarbon (VOH) compound migration through it. Therefore, the vertical connection between the two aquifers is not known at this time.

Ground water contamination in the upper sand aquifer resulting from the landfill is documented in the MPCA files based upon MPCA sampling and analysis of ground water from the site monitoring wells. Four monitoring wells directly downgradient from the landfill and one additional well on the landfill property have shown elevated levels of volatile organic compounds in addition to increased levels of leachate indicating parameters such as chlorides and specific conductance. A review of monitoring data from two larger downgradient well users in the lower aquifer, a mobile home park and a television station, has not identified any contamination.

On May 22, 1984, MPCA staff sampled five downgradient private wells and the television station well to assess off-site impacts and any imminent health hazards. The results of the sampling showed elevated concentrations of volatile organic parameters in the shallow residential wells.

Due to the initial findings and the need to further define the area of contamination, the MCPA staff conducted additional sampling events on June 11, 1984 and July 5, 1984. Five of the previously tested wells and 29 additional wells downgradient from the landfill were sampled. The testing resulted in the issuance of seven letters by the Minnesota Department of Health (MDH) advising

the residential parties not to use their water for drinking or cooking purposes. Eleven additional parties were notified by the MDH that VOH compounds had been detected in their wells but that the wells could still be safely used for drinking or cooking purposes.

Due to the analytical findings, the lack of a clearly identified "affected area" and the need to provide bottled water to those who were known to be affected, the MPCA Executive Director signed a Determination of Emergency on July 17, 1984 to authorize the expenditure of State Superfund monies in order to provide affected residents with bottled water.

In order to define a well advisory area, the MPCA staff sampled 20 additional residential wells on July 25, 1984. Based upon the test results, the MDH and MPCA delineated a three and one-half block well advisory area. On August 29, 1984, the MDH notified 81 property owners within the well advisory area that they should discontinue the use of their private wells for drinking and cooking purposes. As a result, these parties were informed of the bottled water program established by the MPCA, Beltrami County and the city of Bemidji.

On August 28, 1984, the MPCA Board approved a staff request to expend up to $60,000 from the State Superfund for the purpose of conducting a water supply feasibility study for the well advisory area and a suitable buffer zone. It has been determined by the U.S. Environmental Protection Agency (EPA) that this feasibility study is consistent with the National Contingency Plan (NCP). The feasibility study required the MPCA's consultant to review the well advisory area and based upon the hydrogeological data to identify an appropriate buffer zone which would be served by a central water supply system. The MCPA conceptually screened various alternatives to determine

which alternatives should be studied further in the feasibility study. A no action alternative as well as the temporary alternative of providing carbon filters to the affected residents were evaluated and eliminated from further consideration (see p. 7, Alternatives Evaluation). The water supply alternatives that the MPCA required to be studied further included the construction of a distribution system which would be connected to the city of Remidji water supply system; the construction of an independent water supply system which would include wells, a water tower and a distribution system; and an independent water supply system involving a surface water treatment plant and distribution system. The Preliminary Alternatives Evaluation Report dated November 21, 1984 recommended the elimination of the surface water treatment plant system from further consideration due to excessive costs and operational requirements as compared to the other two alternatives.

On January 23, 1985, the MPCA staff received the Final Feasibility Study Report which recommended the construction of a water supply system consisting of two deep wells, a water tower and distribution system. That action is the subject of this Record of Decision. This alternative provides a cost-effective alternative when compared to the other alternatives for supplying a potable water supply to the affected area.

CURRENT SITE STATUS:

At present, the Kummer Sanitary Landfill appears to be the major source of volatile organic contamination found in private drinking water wells in the area (See Table 1). The site is currently listed on the proposed National Priorities List and a Remedial Investigation/Feasibility Study (RI/FS) is scheduled to begin

June, 1985 with the U.S. Environmental Protection Agency (EPA) funding under the MPCA/EPA Superfund Multi Site Cooperative Agreement. Until the RI/FS is completed, the MPCA staff is unable to determine whether minor sources in addition to the landfill are responsible for the contamination. However, due to the emergency water supply problem in the affected area, the State proceeded with the water supply feasibility study with State Superfund monies prior to the landfill's RI/FS.

The MPCA's testing of residential wells downgradient of the landfill has revealed the presence of 18 different volatile organic compounds in the ground water. The MPCA has collected samples from 71 private wells since May of 1984. The testing has shown that many of the wells contain several (up to 14) different volatile organic compounds. The types of compounds, their established health risk limits and concentration ranges found to date are listed in Table 2. Several of the compounds exceed the established 10^{-6} health risk limits while a number of compounds do not have established limits. In many cases, the residential wells contain numerous compounds which do not have established health risk limits or are below such limits and the actual health risk to the water user cannot be determined. However, the endangerment assessment has identified a 3.3×10^{-4} excess cancer risk (approximately 3 excess cancers per 10,000) in the affected area.

As of February, 1985, the MPCA's well advisory area consisted of a three and one-half block area east and southeast of the Kummer Sanitary Landfill. However, an additional area between the well advisory area and Lake Bemidji is downgradient of the landfill and the potential contamination of wells in that area is very high. As a result, the entire area as outlined in Figure 3 has been included for the water supply system. The area has 363

residences and businesses and an estimated population of 960 persons.

ENFORCEMENT HISTORY:

On March 6, 1978, the MPCA staff issued a Notice of Noncompliance to Jon Kummer, operator of the Kummer Sanitary Landfill for violations of the Minnesota solid waste rules.

On May 15, 1979, the MPCA staff issued a Notice of Violation to Jon Kummer for continuing to violate Minnesota solid waste rules.

On December 12, 1979, the MPCA entered into a Stipulation Agreement with Jon and Charles Kummer in order to upgrade the landfill's operating conditions, ground water monitoring system and to collect a civil penalty.

On August 6, 1982, the MPCA proposed a second Stipulation Agreement to Jon and Charles Kummer in order to bring the landfill into compliance with the 1979 Stipulation Agreement and MPCA solid waste rules. An agreement could not be reached.

In April, 1983, the State commenced legal action against Jon and Charles Kummer in their individual capacities and Charles and Jon Kummer doing business as Kummer Sanitary Landfill. The complaint alleged violations of State statutes, MPCA solid waste and water quality rules and the 1979 Stipulation Agreement.

On November 4, 1983 the State sent the Kummers a proposed settlement agreement, but the Kummers were not willing to sign the settlement agreement. On June 26, 1984, the MPCA Board issued a State Superfund Request for Response Action (RFRA) to Charles, Ruth and Jon Kummer which required a RI/FS and remedial action program due to ground water contamination at and around the landfill.

On August 28, 1984, the MPCA Board issued a State Superfund Determination of Inadequate Response (DIR) to Charles, Ruth and Jon Kummer. The document was issued due to Charles and Ruth Kummer's statement that they were unable to fund the work required in the RFRA and due to Jon Kummer's failure to respond to the MPCA issued RFRA.

On January 14, 1985 the State sent the Kummers a proposed settlement agreement.

On February 20, 1985 the MPCA received a response to the proposed settlement agreement from Charles Kummer's attorney which indicated that the Kummers were unwilling to conduct any long term ground water monitoring or pay any civil penalties for past solid waste violations. The MPCA is currently in the process of issuing the Kummers a notice of intent to revoke the permit to operate the landfill and a closure order to outline closure activities and schedule at the landfill.

The MPCA files do not indicate the disposal of hazardous waste at the Kummer Sanitary Landfill. The MPCA sent 39 Requests for Information under the Minnesota Superfund Act to businesses located in the landfill service area regarding their waste disposal practices at the landfill. The responses received by the MPCA have not identified any responsible parties other than the Kummers.

The Kummer Sanitary Landfill has been classified by the EPA as a Category I site (fund lead from the beginning, no or marginal prospects for enforcement) and therefore, federal funds should be utilized for the design and construction of the recommended water supply system.

ALTERNATIVES EVALUATION:

November 7, 1984 the MPCA funded feasibility study was initiated by the

consulting firms of Howard, Needles, Tammen and Bergendoff and the Barr Engineering Company. The purpose of the feasibility study was to evaluate three water supply alternatives to serve the affected area which included:

1. Construction of a distribution system and connection to the city of Bemidji water supply system;

2. Construction of wells, a water tower and distribution system and;

3. Construction of a surface water treatment plant using water from Lake Bemidji, a reservoir (or other storage mechanism) and distribution system.

A no action alternative was considered prior to funding the project. However, based upon the residential well data, the establishment of a well advisory area by the MDH and the lack of information regarding the source of the release, the MPCA staff determined that the public health in the area was clearly threatened which is supported in the endangerment assessment. As a result, the no action alternative which would have required the public to remain on bottled water for an indefinite period of time was eliminated from consideration.

The temporary alternative of supplying the affected residents with carbon filters was also considered prior to project funding. This alternative would require routine testing and maintenance of carbon columns by homeowners on a regular basis. If the carbon columns were improperly maintained or neglected a possibility of contaminant breakthrough would occur rendering the columns ineffective and posing a threat to public health. As a result, the MDH and MPCA did not consider the carbon filter alternative reliable and effective, therefore, it was eliminated from further consideration.

The first phase of the feasibility study involved the evaluation of the available hydrogeologic data; establishment of an affected area (see Figure 3) which includes the well advisory area and buffer zone to be

the water supply area and the evaluation of each water supply alternative. The alternatives were each screened by using the following criteria:

1. Ease of implementation;
2. Reliability;
3. Ease of operation and maintenance;
4. Effect on the contaminant plume;
5. Effect on Bemidji's municipal wells;
6. Special requirements;
7. Significant engineering;
8. Social impacts;
9. Environmental effects;
10. Long-term effectiveness; and
11. Capital and operational costs

Upon completion of the initial evaluation of the three water supply alternatives and the submission of the Preliminary Alternative Feasibility Report, the surface water treatment plant alternative was eliminated from consideration. This decision was based upon excessive capital and operation costs, the difficulty of operation and maintenance, significant engineering requirements and the lowest reliability as compared to the other available alternatives.

During the second phase of the feasibility study, a second, lower cost well alternative was included in the evaluation process (Figure 4) at the request of the Northern Township Board. This alternative involved two wells, a pressure tank in lieu of a water tower and a distribution system with downsized watermains as compared to the original well alternative (Figure 5).

On January 21, 1985, the MPCA staff received the Final Report on the Feasibility Study which recommended the elimination of the alternatives

involving the construction of a distribution system to be connected to the city of Bemidji's water supply system (Figure 6) and the lower cost well alternative which would utilize a pressure tank storage system. The first of these two alternatives cannot be implemented due to the city of Bemidji's policy that services will not be extended to areas outside of the city limits. Northern Township is unwilling to petition the city for annexation, and therefore, the connection to the city is not feasible. Besides this, the city of Bemidji's water system has an insufficient water capacity to serve the affected area. Normally, an additional well could be drilled to alleviate this problem. However, the city's distribution system includes a section which is incapable of accepting additional water pressure. As a result, this section of watermain, which includes a crossing under the Mississippi River, would require replacement. Although the cost of the distribution system under the alternative was estimated to cost $1,367,512, the necessary improvements to the Bemidji system would require an estimated $575,000. As a result, the total cost of the connection alternative is greater than that of the recommended alternative and therefore was eliminated in the final report.

The lower cost well alternative was eliminated in the final report due to its lower reliability, social impacts, and its lack of long-term effectiveness. This system does not meet accepted engineering practice. The Recommended Standards for Water Works as developed by the Great Lakes - Upper Mississippi River Board of State Sanitary Engineers specifically states that pressure tanks when provided as the only storage facilities are only acceptable when serving less than 50 homes. The estimated number of residences or businesses (363) is clearly well above that limit, therefore some form of ground or elevated storage is necessary. The system is also not as reliable

as a system involving wells and a water tower due to the lack of storage should a well require servicing. The design of this system is such that it is more susceptible to freezing during the long Minnesota winters. Further, the report indicated that significant pressure fluctuations would occur in the system due to the pressure tank, thus adversely affecting the supply of water to the users of the system. Also, water discoloration is a common occurence in the area due to high iron and manganese levels. Since the water would come into greater contact with air in a pressure tank than in a water tower, greater precipitation would occur and the problem of discolored water would likely be exacerbated. As a result, the lower cost well alternative was eliminated from consideration.

The recommended alternative consists of two 175 gallon per minute wells, two well pumps, one well house, a 75,000 gallon water tower and distribution system. This alternative was evaluated using the same criteria as previously described and was selected as the most cost effective water supply system (Figure 7). The system meets accepted engineering practice by fulfilling the concept of firm pumping capacity and will provide steady pressure to the users. Firm pumping capacity is defined as the capacity of a water system with the single largest well or pump out-of-service. Accepted engineering practice dictates that a water system have a firm pumping capacity equal to or greater than the maximum day demand.

Three potential well sites have been identified outside of the affected area. Sampling from stainless steel wells placed into the shallow aquifer have indicated that the water was free of volatile organic contamination. The sites are located at a sufficient distance and the pumping volume of the wells is low enough to ensure that the contaminant plume will not be drawn

into the new municipal wells. In addition, the wells will be constructed in a deep uncontaminated aquifer and the site will be verified for acceptability during the design stage of the project through a pump test program.

Although the capital cost of the recommended alternative exceeds the capital cost of the alternative having two wells and a pressure tank (See Table 3 for comparison of capital and O & M costs for all the evaluated alternatives), it has been determined that the recommended alternative is cost-effective and consistent with the NCP. This determination is based upon the following factors:

1. The system will provide a safe water supply and adequately protect public health;
2. The recommended alternative meets accepted engineering practices;
3. The system will minimize reliability impacts such as pressure fluctuations and water discoloration.

COMMUNITY RELATIONS:

Since the discovery of the contamination in the residential wells, the MPCA staff has worked closely with the local units of government and three public meetings have been held to date. After the MPCA Director declared and emergency, a public meeting was held in Bemidji. this meeting occurred prior to the start of the feasibility study. A second meeting was held after the Preliminary Feasibility Study Report was issued in order to discuss the report results with people in the community and to answer their questions. A third public meeting was held upon completion of the Final Report of the Feasibility Study in order to review the study conclusions, the estimated costs and the affect of the recommendation of the residents of the affected area.

The MPCA provided an opportunity for the interested persons to comment on the feasibility study and the related endagerment assessment document through a public comment period. The comment period was advertised in the local newspaper, the Bemidji Pioneer. The advertisement announced the availability of copies of the two documents for public review and comment at the Bemidji Public Library, the information repository for the site. No comments were received by the MPCA during the comment period.

Throughout the discussions, the local units of government and affected residents have expressed their belief that the ground water contamination is due to the Kummer Sanitary Landfill and that the State should pay for the water supply system since it was responsible for permitting the landfill. In addition, the local units of government have stated that the cost of constructing any of the alternatives far exceeds their financial capabilities and that none of the alternatives can be built without Superfund monies. Generally, the residents support the recommended alternative since it will deliver potable water under sufficient pressure. However, there is concern regarding the potential for discolored water due to the use of deep ground water as has been experienced in Bemidji. The use of a water tower and the addition of polyphosphate should minimize this problem.

The community has rejected the lower cost well alternative which would not have significant storage capacity and would likely have pressure and water discoloration problems. The residents feel that they did not have these problems prior to the development of the ground water contamination situation and that the solution to the water supply problem should provide a potable and reliable water supply.

A final concern involves real estate values in the affected area which reportedly have been impacted by the ground water contamination. Several residents have stated that their homes cannot be sold at any price and that realtors will not show houses for sale in the area to prospective buyers. A member of the Beltrami County Board stated during the final public meeting that the county assessor was being directed to look into the situation and reappraise the properties accordingly. The local units of government and the residents firmly believe that reduced property values will remain until the new water system has been constructed and placed into operation.

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS: -

The activities involved in the design and construction of the recommended water supply system are not significantly subject to current State or federal environmental laws.

Since the project involves the design and construction of a municipal water supply system, the design and operation of the system is subject to regulations by the MDH. This is consistent with Section 1413 of the Safe Drinking Water Act. Specifically, the final plans and specifications are subject to MDH review and approval under Minn. Rules Chapter 4720. These rules also dictate the sampling frequencies of the future municipal wells and provide the water quality standards which must be met by the system.

In addition to these requirements, the MDH regulations require that the future operator(s) of the water system be certified under Minn. Rules Chapter 9400, a ground water appropriation permit will be required from the Minnesota Department of Natural Resources prior to the installation of the new municipal wells, and compliance with applicable OSHA regulations must be required from all design and construction contractors.

RECOMMENDED ALTERNATIVE:

The recommended water supply alternative has been determined to meet the requirements of 40 CFR Part 300.68(j). The EPA considers the alternative involving the wells and water tower to be the most cost-effective means of providing a reliable water supply to the affected area. The recommended alternative is technically feasible, meets accepted engineering practices and standards including provision for fire protection and effectively protects the public's health and welfare. Although the capital and operational costs of the recommended alternative exceed the costs of the well and pressure tank alternative, the recommended alternative will more effectively supply a potable water supply to the area. The lower cost of the well and pressure tank system was developed by replacing the water tower with a pressure tank, downsizing the watermains and reducing the amount of watermain looping. These limitations, the lack of adequate water storage capabilities, the potential for watermain freezing, as well as the anticipated pressure fluctuations and water discoloration due to precipitated iron and manganese, render the system ineffective and unacceptable. The pressure tank system does not meet sound engineering practice, and the area would likely experience significant water supply problems not encountered previously.

The alternative involving the construction of a distribution system to be connected to the city of Bemidji system is not cost-effective when the necessary improvements to the city's system are taken into account. Further, this alternative may not be feasible since the city has refused to consider the extension of services beyond the city limits without the area petitioning for annexation. Although this alternative would be highly reliable and would protect the public health, the need for additional capacity and for watermain improvements

including a river crossing increase the total project costs beyond the recommended alternative.

The surface water treatment plant alternative which would draw water from Lake Bemidji was eliminated from consideration in the early stage of the feasibility study due to excessive capital and operational costs, much greater engineering and operational requirements and less reliability as compared to all of the other evaluated alternatives. The operation and maintenance (O & M) costs of the surface water treatment alternative is approximately three times greater than the O & M costs of the other alternatives. As a result, the EPA has determined that the alternative was not a cost effective means of supplying water to the affected area.

The capital costs of the recommended alternative are outlined in Table 4. As may be noted, the costs include:

1. Two wells, which for estimation purposed were assumed to be of 100 feet in length and each having 175 gallon per minute capacities. Actual depths to be determined during pump test;
2. Two well pumps;
3. A well house which includes all of the electrical components and chemical feed equipment;
4. A 75,000 gallon water tower;
5. A distribution system (See Figure 5) composed of 6, 8, and 10 inch water mains;
6. Service lines from the watermain to the existing residences or businesses;
7. Fire hydrants;
8. The cost of acquiring sites for the wells and water tower; and
9. Surface restoration costs.

In addition, the capital cost estimate includes a ten percent contingency fund

and a ten percent figure for engineering, legal and fiscal activities. The cost of providing service to vacant lots for future growth is specifically excluded. The MPCA has decided to take the lead on this project with federal funds. The site has been classified as a 90% federal and 10% State cost-sharing site for remedial implementation activities.

OPERATION AND MAINTENANCE COSTS:

The Final Report of the Feasibility Study outlined the operation and maintenance cost for the recommended alternative. These estimated costs are presented in Table 5. The final O & M costs will be based on the final O & M plan developed during the design phase.

The EPA has determined that the estimated O & M costs, which will be paid by the users of the water system after the first year, sufficiently reflect the O & M activities which the system will require over time. The total federal funding will include first year O & M costs.

SCHEDULE:

Milestones	Date
Sign Record of Decision	June, 1985
Amend CA for Design and Construction	June, 1985
NPL Update #2 Finalized	June, 1985
Complete Design	July, 1985
Complete Construction	August, 1986
System Start Up	August, 1986

FUTURE ACTIONS:

In June, 1985 an EPA funded RI/FS is scheduled to be initiated for the Summer Sanitary Landfill under the MPCA/EPA Superfund Multi Site Cooperative

Agreement. The RI/FS activities will be conducted at and around the landfill. Upon completion of the RI/FS, another ROD will be prepared to address the following possible actions:

1. Management of migration to control contaminated ground water.
2. Source control measures to minimize the release of hazardous substances from the site.

TABLE 1

COMPARISON OF VOH COMPOUNDS DETECTED AT KUMMER SANITARY LANDFILL MONITORING WELLS AND NORTHERN TOWNSHIP PRIVATE WELLS

Compound	Kummer Landfill	Private Wells
Ethyl Ether	X	X
Benzene	X	X
Tetrahydrofuran	X	X
Methylene chloride	X	X
1,1 Dichloroethane	X	X
Cis 1,2 Dichloroethylene	X	X
1,2 Dichloroethane	X	X
1,1,1 Trichloroethane	X	X
1,1 Dichloro-1-propene	---	X
1,1,2 Trichloroethylene	X	X
Trichlorofluoromethane	X	X
1,1 Dichloroethylene	X	X
Chloroform	X	X
1,2, Dichloropropane	X	X
Carbon Tetrachloride	---	X
1,1,2,2 Tetrachloroethylene	X	X
1,2 Dibromoethane	---	X
Ethyl Benzene	X	---
Toluene	X	---
m-xylene	X	---
p + o - xylene	X	---
Methyl Isobutyl Ketone	X	---

TABLE 2

NORTHERN TOWNSHIP

VOLATILE ORGANIC COMPOUNDS FOUND IN RESIDENTIAL WELLS

Compound	10^{-6} Excess Lifetime Cancer Risk Levels (ug/l)	Range Found in Residential Wells (ug/l)
Ethyl Ether		0 - 49.0
Benzene	0.66	0 - 2.30
Tetrahydrofuran		0 - 83.0
Methylene chloride	0.19	0 - 46.0
1,1 Dichloroethane		0 - 5.40
Cis 1,2 Dichloroethylene		0 - 27.0
1,2 Dichloroethane	0.94	0 - 3.80
1,1,1 Trichloroethane	22.0	0 - 6.10
1,1,2 Trichloroethylene	2.7	0 - 3.70
Trichlorofluoromethane	0.19	0 - 5.60
1,1 Dichloroethylene		0 - 1.70
Chloroform	0.19	0 - 1.80
1,2 Dichloropropane		0 - 1.20
Carbon Tetrachloride	0.4	0 - 0.20
1,1,2,2 Tetrachloroethylene	0.8	0 - 25.0
1,2 Dibromoethane		0 - 0.40

NOTE: Health risk limits adapted from 1) U.S. EPA, 1980, Water quality criteria documents, 45 FR79318-79379, Nov. 28, 1980; and 2) U.S. EPA, 1984, Relative carcinogenic potencies among 54 chemicals evaluated by the Cancer Assessment Group as suspected carcinogens, EPA-600/8-84-014A.

TABLE 3

ESTIMATED CAPITAL AND OPERATIONAL COSTS OF EVALUATED ALTERNATIVES

Alternatives	Capital Cost	Annual Operation and Maintenance Cost
No Action	0	0
Surface Water Treatment Plant Storage, Distributin System	$2,296,183	$78,250
Connection to the city of Bemidji, Distribution System	1,367,512 + 575,000*	33,814
2 Wells, Pumps, Well House, Water Tower, Distribution System	1,624,850	28,440
2 Wells, Pumps, Well House, Pressure Tank, Downsized Distribution System	1,280,363	25,560

* Bemidji System Improvements

NOTE: Capital costs include ten percent engineering/legal/fiscal cost and ten percent contingency.

TABLE 4

CAPITAL COSTS

RECOMMENDED NEW WELL ALTERNATIVE

Site Aquisition	$19,000
Wells and Pumps	99,000
Well House	58,000
Water Tower	121,800
Water Distribution System	
1. Watermain	520,229
2. Fittings, Hydrants and Valves	141,568
3. Surface Restoration within Right-of-Way (ROW)	115,720
4. Services:	
a. From Main to ROW	82,244
b. From ROW to House	185,291
SUBTOTAL	$1,342,852
CONTINGENCY (10%)	134,285
SUBTOTAL	$1,477,137
ENGINEERING, LEGAL and FISCAL (10%)	147,713
TOTAL	$1,624,850

NOTE: Table adapted from HNTB Final Report of the Feasibility Study, January 21, 1985.

Service to vacant lots and associated costs are not federally fundable and have been deleted.

TABLE 5

ANNUAL OPERATION AND MAINTENANCE COST *

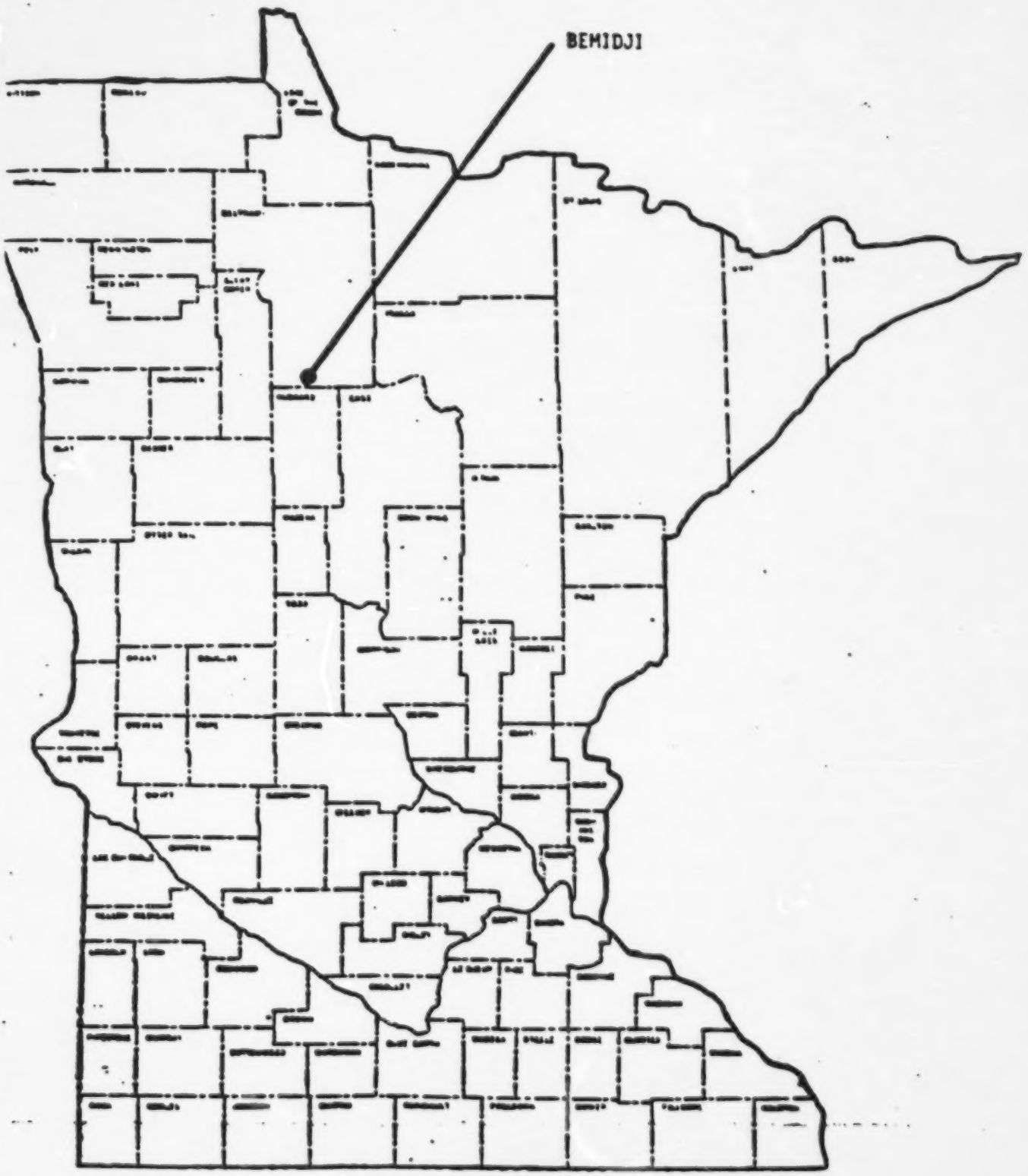
RECOMMENDED NEW WELL ALTERNATIVE

Labor		$ 8,440
Postage		200
Power		2,900
Chemicals		750
Fuel (heating)		250
Vehicle Cost		2,500
Reserve Requirement		13,400
	TOTAL	$29,440

NOTE: Table from HNTB Final Report of the Feasibility Study, January 21, 1985.

*Cost to be federally funded for the first year of service.

Figure 1



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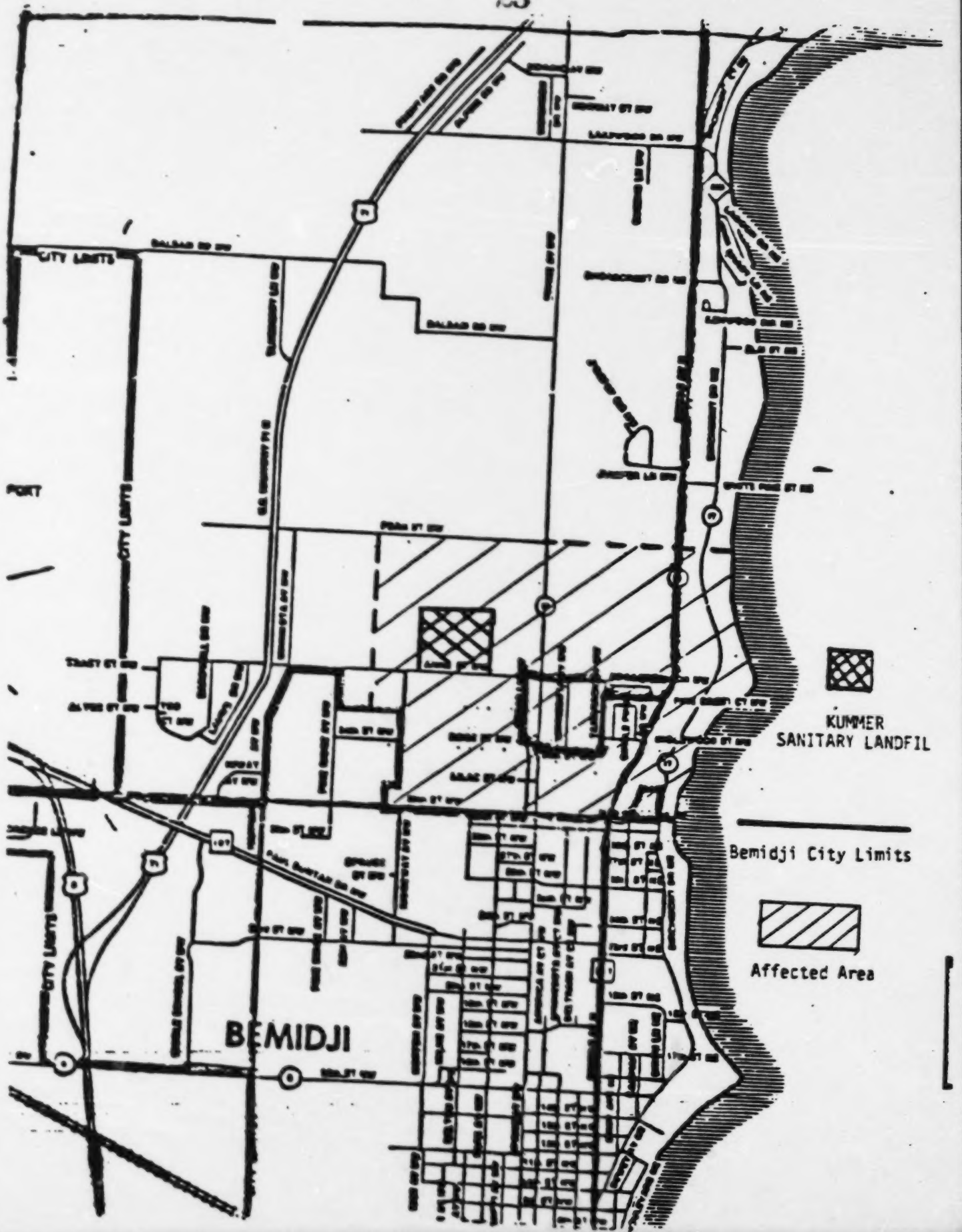
CITY LIMITS
CITY LIMITS
PORT
BEMIDJI
KUMMER
SANITARY LANDFIL
Bemidji City Limits
Affected Area

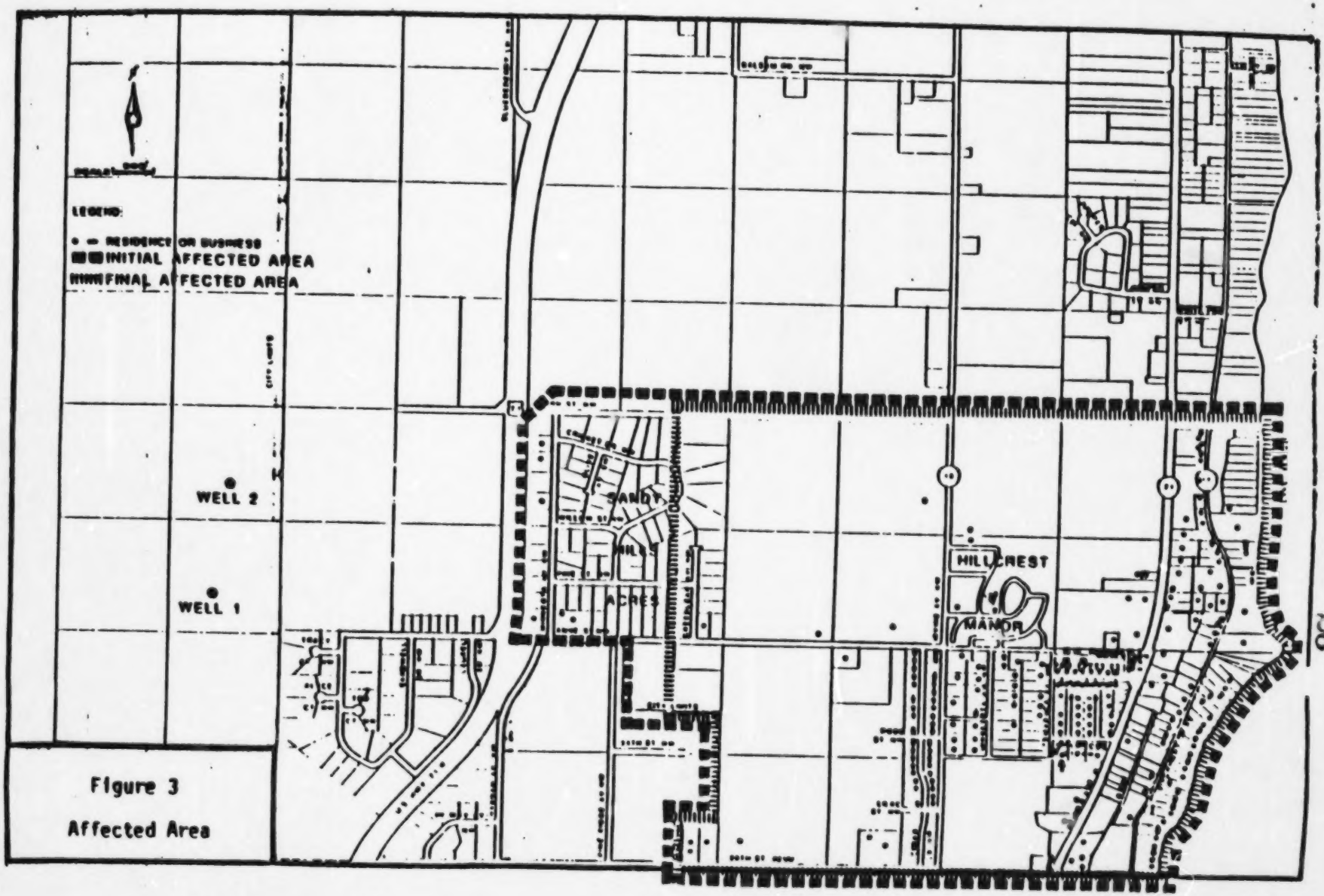

Figure 3

Affected Area

Adapted from IINTB Final Report of the Feasibility Study, January 21, 1985

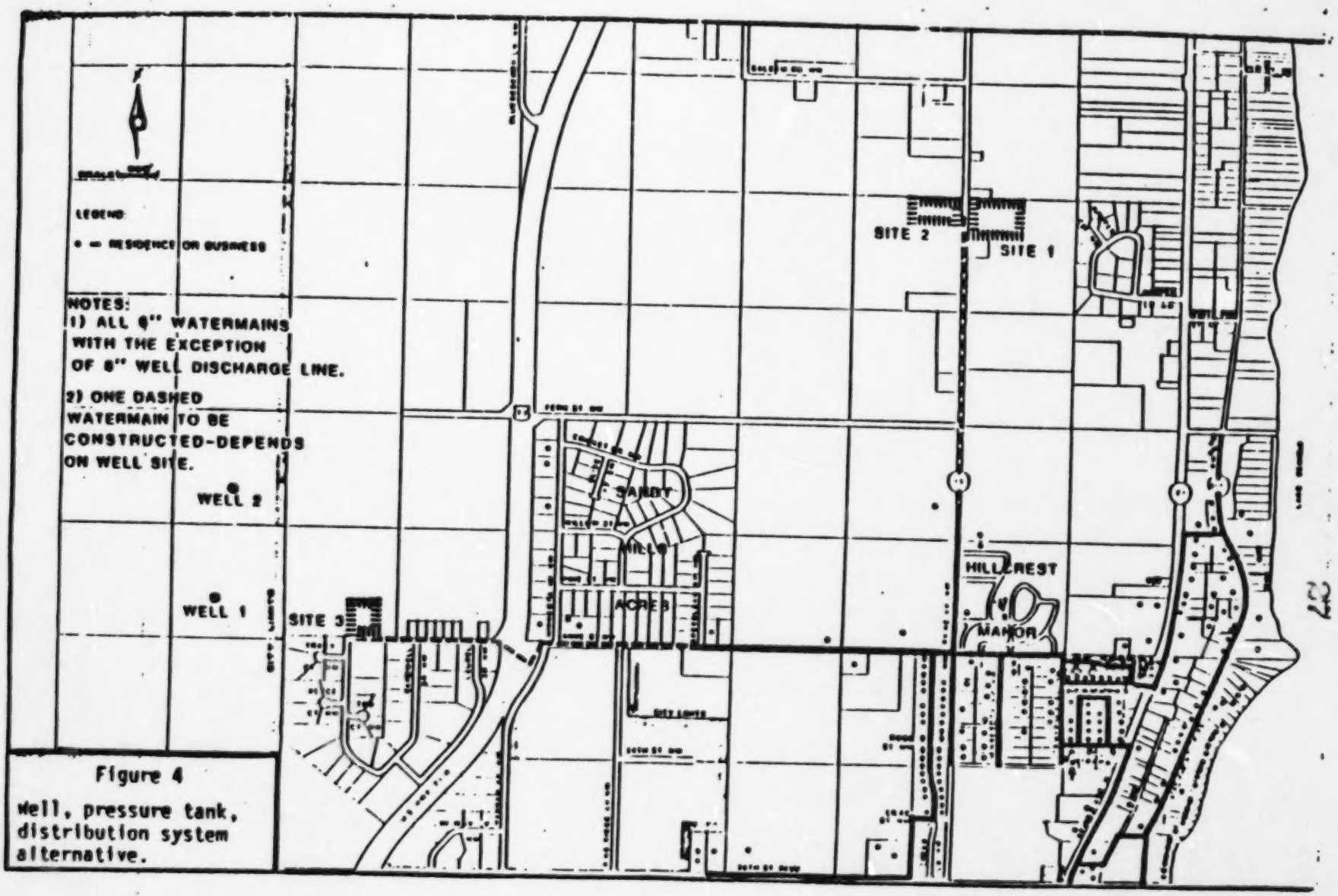

Figure 4

Well, pressure tank, distribution system alternative.

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Adapted from HMTB Final Report of the Feasibility Study, January 21, 1985

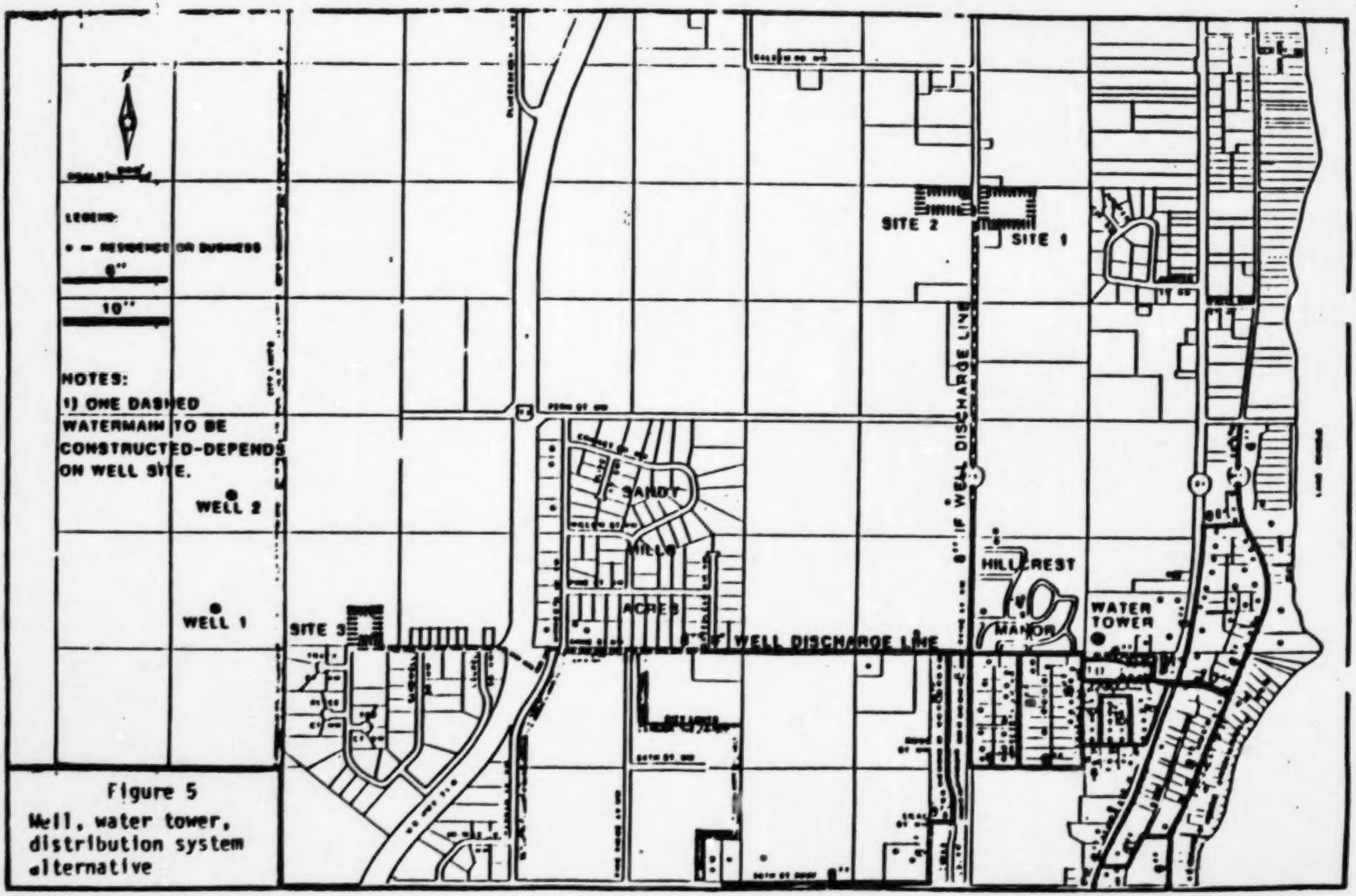

Figure 5
Well, water tower, distribution system alternative

Adapted from HNTB Final Report of the Feasibility Study, January 21, 1985

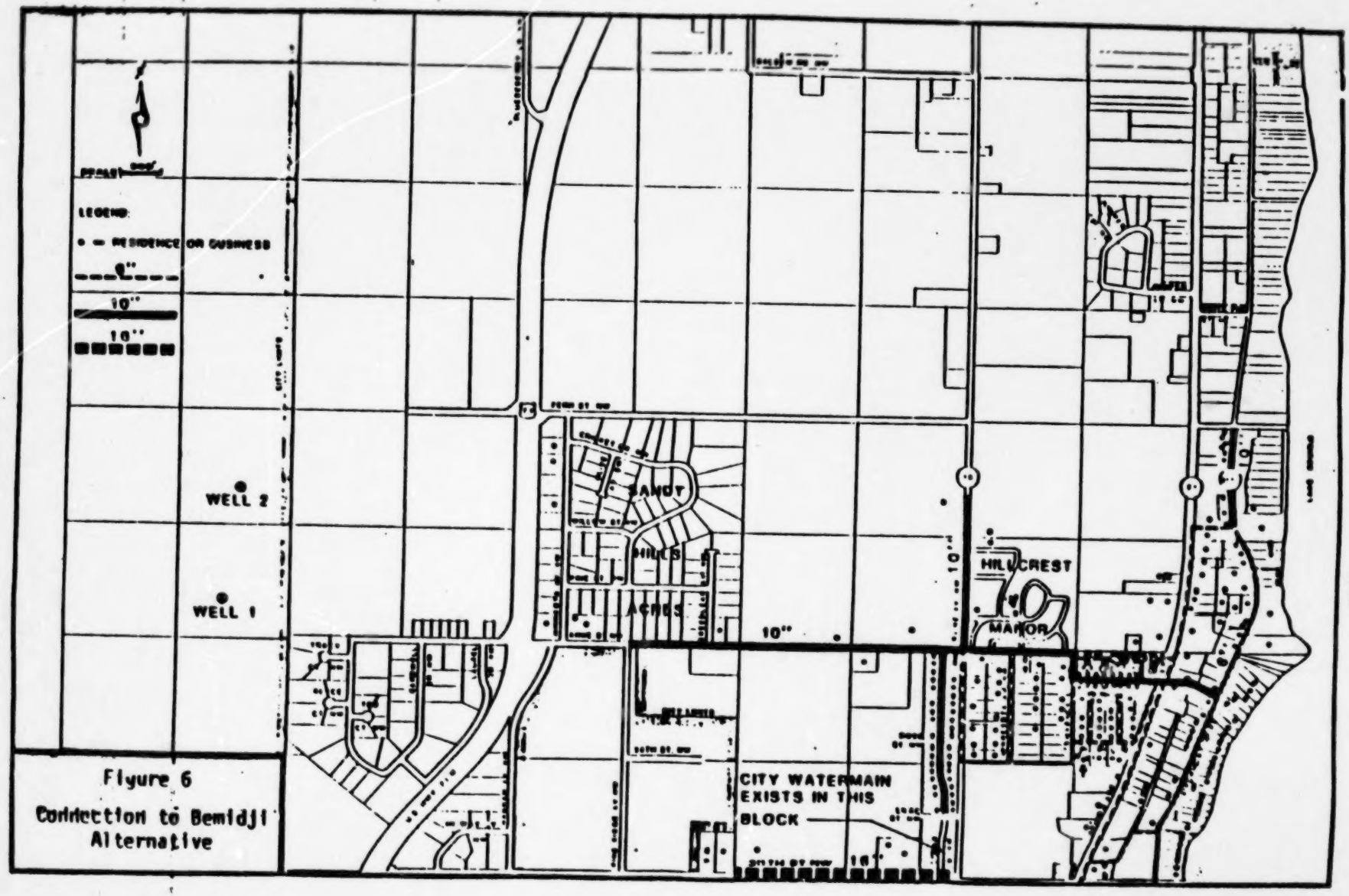

Figure 6
Connection to Bemidji
Alternative

Adapted from HNTB Final Report of the Feasibility Study, January 21, 1985

Figure 7
NORTHERN TOWNSHIP, MINNESOTA

Alternative	Capital Cost (1,000)	Annual O & M Cost	Public Health Considerations	Environmental Considerations	Technical Considerations	Public Comment	Other
1. No Action	-	-	Unacceptable exposure to volatile organic compounds from private water supplies. Residents would require continued bottled water.	Continued migration of contaminated groundwater to additional downgradient wells and ultimately Lake Bemidji		High Resistence	
2. Hook up to Bemidji and Distribution System	1,367 + 575*	$33,814	Reduces public health threat to less than 10^{-6}.	SAME as 1	Relies on simple technology	High Resistence	City has maintained that it will not extend services outside the city limits. Township unwilling to petition for annexation. Has second highest O&M cost.
*3. Drill Deep Wells Watertower, Distribution System	1,625	$28,440	Reduces public health threat to less than 10^{-6}	SAME as 1, 175 gallons per minute well will not reverse shallow ground water flow direction or affect Bemidji wells.	Relies on proven construction technology	Acceptable	Provide safe and reliable water supply, meets accepted engineering practice, provides steady pressure and reduces potential water discoloration.

2

Figure 7

NORTHERN TOWNSHIP, MINNESOTA

4. Drill Deep Wells, Pressure Tank and Distribution System	1,280	$25,560	Reduces public health threat to less than 10^{-6}	SAME as 3	Relies on proven construction technology. Larger well needed since instantaneous peak demand cannot be met with absence of water tower	Moderate Resistence	System does not meet accepted engineering practice, pressure variations expected at times, water subject to discoloration due to iron and manganese, less watermain looping, potential for main freezing.
5. Surface Water Treatment Plant Distribution System	2,296	$78,250	Reduces public health threat to less than 10^{-6}	SAME as 1	Significantly greater engineering required than other options	None	Alternative eliminated at preliminary stage of feasibility study due to highest capital and O&M costs.

* Money required by city system for improvements.

**Recommended alternative

COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

KUMMER SANITARY LANDFILL

NORTHERN TOWNSHIP, DRINKING WATER OPERABLE UNIT, BELTRAMI COUNTY, MINNESOTA

CONCERNS RAISED PRIOR TO THE FEASIBILITY STUDY COMMENT PERIOD:

Since the discovery of the residential well contamination in May, 1984, the Minnesota Pollution Control Agency (MPCA) staff has worked closely with the local units of government and three public meetings have been held to date. The first public meeting with approximately 100 people was held after the MPCA Director's Determination of Emergency, but prior to the feasibility study while a second public meeting with 40 people was held upon completion of the feasibility study's preliminary report. In addition, the MPCA staff sampled 71 residential wells prior to the completion of the feasibility study which allowed for discussions with residents on an individual basis.

The community's concerns prior to the completion of the feasibility study involved:

1. The belief that the contamination is from the Kummer Sanitary Landfill and that since the landfill was permitted by the MPCA, the federal and/or State Superfund should be used to pay for any necessary studies and remedial action;

2. The loss of property values due to the contaminated wells and the inability of the property owners to sell their homes;

3. The high cost of designing and constructing any of the water supply alternatives in light of the communities limited tax base and the need for Superfund monies;

4. The desire to understand the health effects, particularly cancer risks posed by drinking the contaminated ground water; and

5. The means by which the MPCA would monitor the movement of the contaminant plume.

Upon completion of the feasibility study, a third public meeting with approximately 30 people, was held to discuss the alternatives studied, the recommended alternative and the associated costs. During this meeting, the two major concerns involved:

1. The availability of Superfund monies to design and construct the water supply system; and

2. The anticipated pressure fluctuations and the potential water discoloration (laundry staining) problems anticipated if the lower cost well and pressure tank system were constructed.

Several residents indicated that water discoloration in the Bemidji water supply has caused laundry to be stained. The residents expressed the belief that they did not have pressure fluctuation and water discoloration problems prior to the contamination of their private wells and that the water supply system to be built should not impose such problems on them. They further stated that even though a potable water supply would be provided through the lower cost well alternative, the problems with the system would prevent real estate values from rising to their previous levels.

CONCERNS RAISED DURING THE COMMENT PERIOD:

The MPCA provided an opportunity for interested parties to comment on the feasibility study and the related endangerment assessment document through a two-week public comment period which began on March 26, 1985 and ended on April 8, 1985. The comment period was advertised in the local newspaper, the Bemidji Pioneer. The advertisement announced the availability of copies of the two documents for public review and comment at the Bemidji Public Library, the information repository for the site. However, no comments were received by the MPCA during the comment period.

RESPONSE TO COMMUNITY CONCERNS:

The MPCA staff responded to the many resident and local government concerns through the use of public meetings, by conducting discussions with individuals during the sampling of residential wells and through regular telephone

conversations. The MPCA staff attempted to allow these parties to have a significant role during the establishment of the bottled water program and throughout the feasibility study.

The MPCA utilized the local units of government in establishing sources of uncontaminated water for affected residents as well as the distribution of bottles. In addition, local officials provided the MPCA staff with well logs and other valuable information used to select residential wells for the sampling program.

The MPCA and Minnesota Department of Health (MDH) addressed the community's concern regarding the cancer risk associated with consuming the contaminated ground water through:

1. The MPCA Director's Detrmination of Emergency;
2. The establishment of a bottled water program;
3. The delineation fo a well advisory area and the notification of people within the area to not use their water for drinking and cooking puposes; and
4. The funding of water supply feasibility study.

The concern throughout the feasibility study regarding the cost of the water supply system was shared by all of the involved parties. Upon completion of the preliminary feasibility study report, it became clear that all of the alternatives being evaluated involved significant capital costs for construction. As a result, the MPCA staff directed its consultant to develop and evaluate a lower cost alternative which would rely on municipal wells as the water supply. This newly added alternative referred to as "Option 2 of the New Well Alternative" alternative the was under consideration. However, the final feasibility study report did not recommend the construction of the lower cost new well alternative due to its lower reliability, but recommended the construction of the higher cost well alternative which utilizes a water tower for storage. In response to the community's expressed concern that it was unable to finance the system and that the monthly user costs would be exorbitant (as outlined in the feasibility

study), the MPCA staff committed itself to seeking federal and/or State Superfund monies for the design and construction of the water supply system.

In addition to health and cost concerns, several residents and the local units of government expressed their concerns regarding the monitoring of the contaminant plume. Although a well advisory area and an affected area have been delineated, their is a continued desire by the local units of government and the residents that the edge of the contaminant plume be monitored to track its movement. The MPCA and MDH staff's share this concern with the community and have been conducting ground water monitoring from selected private wells on a quarterly basis since the MPCA Director's Determination of Emergency. The data, which is shared with the local units of government and the well owners, has alleviated the community's concern that the contaminant plume may move without detection.

The MPCA staff believes that written comments were not received during the noticed comment period due to the previous community relations activities. The public meetings, discussions with residents during sampling events, regular telephone conversations with local officials and responses to inquiries by the press have proven to be effective opportunities for the expression of concerns by the community and a means for the MPCA staff to communicate ongoing activities to respond to these concerns.